

### **REMARKS**

Reconsideration of this application is requested.

A replacement abstract is attached as required. The attached is thought to be acceptable and entry thereof is requested.

The claims pending for consideration are claims 1-14. Claims 15-19 stand withdrawn subject to rejoinder of claim 15 upon the allowance of claims 1-14.

The Examiner has rejected applicant's claims as follows under Section 102(b):

(1) claims 1-14 as anticipated by Carr (Published U.S. Appl. No. 2001/0011396) and as anticipated by Carr et al. (WO 98/49239). Sections 2 and 3, pages 3-5 of the action;

(2) claims 1-5 and 7-14 as anticipated by Patel et al. (WO 01/66647). Section 4, pages 4-5 of the action;

(3) claims 1-5 and 7-14 as anticipated by Patel et al. (WO 01/66648). Section 5, page 5 of the action; and

(4) claims 1-3 and 7-14 as anticipated by Patel et al. (WO 03/068866). Section 6, pages 5-6 of the action.

The Examiner has also rejected the applicant's claims 1-4 under Section 103(a) as obvious from each of the aforementioned references. Sections 7-11, pages 7-17 of the action.

With respect, the applicant submits that claims 1-14 are not anticipated by the cited references or obvious therefrom.

More specifically, it is noted that applicants' main claim 1, from which all the other claims depend, differs from all of the references applied by the Examiner in the requirements that (1) the substituents x, y and z are only at the  $\beta$ -position of the phthalocyanine ring and (2) the claimed mixture of phthalocyanine dyes is obtainable by a process which comprises cyclization of  $\beta$ -sulfo substituted phthalic acid, phthalonitrile, iminoloindoline, phthalic anhydride; phthalimide or phthalamide.

Carr U.S. 2001/0011396, Carr et al. WO 98/49239, Patel et al. WO 01/66647 and Patel et al. WO 01/66648 all teach phthalocyanines made by sulfonation of the phthalocyanine ring system. This process results in a highly complex mixture that comprises a large number of diverse species. Thus, direct sulfonation of the phthalocyanine ring results in phthalocyanines bearing between 1 to 4 substituents where the substituents can be in either the  $\alpha$  or the  $\beta$  position (see page 2 of the applicant's specification lines 18 to 23). In such a system, any

phthalocyanine compounds with 4 substituents only in the  $\beta$ -position would be a minor component probably representing at most only one or two percent of the total weight of dye.

On the other hand, the applicant has found that by cyclizing 4 equivalents of  $\beta$ -sulfo substituted phthalic acid, phthalonitrile, iminoisoindoline, phthalic anhydride, phthalimide or phthalamide as called for in claim 1, it is possible to obtain a mixture of phthalocyanines exclusively comprising species with 4 substituents only in the  $\beta$ -position.

In support of this, the Examiner is referred to the art cited on page 2, lines 22 to 23 of the applicant's specification (Schofield, J. and Asaf, M; Journal of Chromatography, 1997, 770, pp. 345-348; copy submitted with the applicant's IDS of record. This art compares the capillary electrophoresis profile of sulfo-phthalocyanines prepared by condensation of 4-sulpho-phthalic acid with those prepared by direct sulfonation (the first step in the preparation of all the compounds in the art cited by the Examiner and the step which determines the number and position of the substituents). Those samples prepared by condensation of 4-sulpho-phthalic acid gave characteristic peaks at an analysis time of 20 to 22 minutes (see page 347, last paragraph in Column 1, first paragraph in Column 2). These peaks were either not present or very small in samples prepared by direct sulfonation (see page 347, second paragraph in Column 2). This is consistent with the applicant's position as set out above to the effect that phthalocyanines bearing 4  $\beta$ -substituents are a minor component when direct sulfonation is used to prepare sulfonated phthalocyanines and further reaction products thereof.

In view of the foregoing, the applicant submits that his claims 1-14 distinguish over Carr U.S. 2001/0011396, Carr et al. WO 98/49239, Patel et al. WO 01/66647, Patel et al. WO 01/66648 and WO 03/068866. Accordingly, the Section 102(b) rejections based on these references should be withdrawn.

The Examiner is also requested to reconsider and withdraw the Section 103(a) rejections of applicants' claims as set out in Sections 7-11 of the action. The deficiencies of the Examiner's references have been discussed above. There is nothing in any of the references suggesting the applicant's mixture of phthalocyanine dyes with the characteristic features referred to above.

Ink jet printing is increasingly being used in place of silver halide photography as a means of providing photographic prints. The one area where ink-jet prints often fall short versus silver halide prints is in their long term stability. Thus, ink-jet prints often fade or display

changes in shade on exposure to light Ink-jet prints also fade and change shade in the dark due to the presence of atmospheric ozone.

The present application is concerned with providing dyes and inks which when printed display improved ozone fastness. The applicant has discovered that certain phthalocyanines bearing 4 substituents only in the  $\beta$ -position unexpectedly display significantly improved light and ozone fastness when compared with phthalocyanines as normally used in ink-jet printing which comprise a complex mixture with substituents present in both the  $\alpha$ - and the  $\beta$ -positions (I.e. compounds such as those disclosed in Carr U.S. 2001/0011396, Carr et al. WO 98/49239, Patel et al. WO 01/66647, Patel et al. WO 01/66648 and Patel et al. WO 03/068866).

This advantage is clearly illustrated in the present application in the tables on page 19 and, especially, page 20 where the improved light fastness and ozone fastness of prints derived from inks and compounds according to the present invention is clearly illustrated. In particular the Examiner should note that the two Comparative Dyes are market leading ink-jet dyes.

There is nothing in any of the art cited by the Examiner that would motivate a person of ordinary skill to select a minor component from the mixture of dyes of the type disclosed in Carr U.S. 2001/0011396, Carr et al. WO 98/49239, Patel et al. WO 01/66647, Patel et al. WO 01/66648 or Patel et al. WO 03/068866 (i.e. bearing 4 substituents only in the  $\beta$ -position) in order to improve the ozone and light fastness of ink Jet prints.

Thus, there is nothing in the art cited by the Examiner which would motivate a person of ordinary skill to arrive at the present invention. Accordingly, the applicant submits that the section 103(a) rejections should be withdrawn, along with the Section 102(b) rejections and the claims allowed.


It is noted that the Examiner refers (pages 14-15 of the action) to a "prior art Japanese patent". However, no patent number is given and in the Notice of References Cited no Japanese is listed. Presumably the Examiner intended to refer to WO 01/66648 as this seems to be the subject of the Examiner's discussion at this point in the action. However, if something else is intended, the Examiner is requested to advise.

Since claims 1-14 are thought to be allowable for the reasons noted, the Examiner is requested to rejoin the Group II process claims.

Favorable action is requested.

Respectfully submitted,

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